

GPS RECEIVER MODULE

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The invention relates to a receiver module, more particularly a GPS (Global Positioning System) receiver module for receiving GPS signals and for determining position data therefrom, and to a dual band antenna for such a receiver module. The invention further relates to a printed circuit board (PCB) as well as a mobile telecommunication device having such a dual band antenna.

As is well known, GPS signals serve for global position finding and navigation and are emitted by a network of satellites totaling 24 satellites, which circle the Earth on different orbits, so that at least five satellites are visible at any point on the Earth's surface at any one time.

The positioning is based on the principle of a transit time measurement of signals, which are modulated on electromagnetic carrier waves with a carrier frequency of 1575.42 MHz. The signals emitted by the satellites are time-synchronized and consist of two parts. A first part contains the respective satellite positions and the time with which a clock in the GPS receiver is synchronized. From the second part, the GPS receiver determines the orbit data of the satellites that can be received at that instant. The position of the GPS receiver is calculated from these.

GPS receiver modules which contain the receiving and evaluation electronics needed for this are already known. Depending on the purpose for which the module is intended, the position data are either delivered to an interface for further processing in other units, or the module has an integral display unit for the position data. Modules of this type are built into mobile and fixed navigation equipment for applications in aviation, shipping and road traffic.

Since the GPS modules are becoming ever smaller and thus expensive, efforts are also being made to fit these into appliances that do not typically serve for navigation purposes, such as mobile telephones, portable computers and wrist watches, for example. The integration of a GPS module into such an appliance, however, in many cases also calls for extensive intervention in the electronics of the appliance itself where, for example, inputs to the GPS module are to be made via a key pad of the appliance or position data are to be shown on a display of the appliance.